

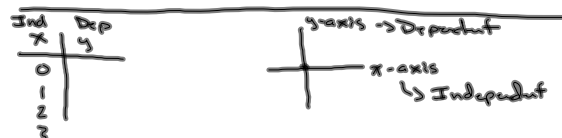
4.1

Writing Equations to Describe Patterns

LESSON 2

Jan 21-8:53 AM

Dependent Variable
 $B = 3P + 1$
 Rate of Change
 Independent Variable
 Constant stays the same.



Feb 28-3:54 PM

Rate of Change

$$\frac{\Delta y}{\Delta x}$$

$$= \frac{3}{1} = \boxed{3}$$

| x | y |
|---|----|
| 0 | 4 |
| 1 | 7 |
| 2 | 10 |
| 3 | 13 |

Constant

To find the constant is when the Independent Variable is equal to Zero

| x | y |
|---|----|
| 0 | 4 |
| 1 | 7 |
| 2 | 10 |
| 3 | 13 |

Equation $y = 3x + 4$

Connect

EXAMPLE 1:

The pattern in the table below continues. For each table:

- Describe the pattern that relates v to t .
- Write an expression for v in terms of t .
- Write an equation that relates v to t .
- Verify your equation by substituting values from the table.

| Term Number, t | Term Value, v |
|------------------|-----------------|
| 1 | 11 |
| 2 | 22 |
| 3 | 33 |
| 4 | 44 |

$$\frac{\Delta v}{\Delta t} = \frac{11}{1} = 11$$

a) As t increases by 1, v increases by 11

b) $11t + 0$
or $11t$

c) $v = 11t$

d) $44 = 11(4)$
 $44 = 44 \checkmark$

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Practice
YOU TRY!

The pattern in the table below continues. For each table:

- Describe the pattern that relates v to t .
- Write an expression for v in terms of t .
- Write an equation that relates v to t .
- Verify your equation by substituting values from the table.

| Term Number, t | Term Value, v |
|------------------|-----------------|
| 1 | 5 |
| 2 | 8 |
| 3 | 11 |
| 4 | 14 |

a) As t increases by 1, v increases by 3

b) $3t + 2$

c) $v = 3t + 2$

d) $11 = 3(3) + 2$
 $11 = 9 + 2$
 $11 = 11 \checkmark$

$\frac{\Delta y}{\Delta x} = \frac{3}{1} = 3$

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Practice
YOU TRY!

The pattern in the table below continues. For each table:

- Describe the pattern that relates v to t .
- Write an expression for v in terms of t .
- Write an equation that relates v to t .
- Verify your equation by substituting values from the table.

| Term Number, t | Term Value, v |
|------------------|-----------------|
| 1 | 7 |
| 2 | 6 |
| 3 | 5 |
| 4 | 4 |

a) As t increases by 1, v decreases by 1

b) $-t + 8$

c) $v = -t + 8$

d) $6 = -(2) + 8$
 $6 = 6 \checkmark$

$\frac{\Delta y}{\Delta x} = \frac{-1}{1} = -1$

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Practice
YOU TRY!

The cost to print brochures is the sum of a fixed cost of \$250, plus \$1.25 per brochure.

- Write an equation that relates the total cost, C dollars, to the number of brochures, n .
- What is the cost of printing 2500 brochures?
- How many brochures can be printed for \$625?

a) $C = 1.25n + 250$

b) $C = 1.25(2500) + 250$
 $= 3125 + 250$
 $C = 3375$

c) $C = 1.25n + 250$
 $625 = 1.25n + 250$
 $625 - 250 = 1.25n$
 $375 = 1.25n$
 $\frac{375}{1.25} = n$
 $300 = n$

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Practice
CLASSWORK

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Picture
Table Value
Equation
↓
Solve the Problem

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